

Sequence Listing

<110> Lin, Ching-Yu
Lin, Ruey-Wen
You, Chiou-Mien
Huang, Hsing-Hsuan
Lee, Bor-Heng
Lee, Hsien-Hsiung
Lin, Yu-Ju
Fan, Chih-Chun
Hsu, Han-Chuan
Shih, Chia-Wen
Yeh, Chih-Hsing
Kao, Yi-Feng
Pan, Chih-Long
Chan, Peter



<120> METHOD AND DETECTOR FOR IDENTIFYING SUBTYPES OF HUMAN PAPILLOMA VIRUSES

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tgactcctta ttagatgag 19

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tggtgtgccc cctccctcca caagtt 26

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gggggccgcc gccgccaagc ct 22

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<400> 429

ttatgctggc atgtcc 16

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<400> 430

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catgcgtcat	gtggaagagt	atgatttaca	atattttttt	caattatgta	gcattacatt	180
gtctgctgaa	gtaatggcct	atattcacac	aatgaatccc	tctgttttgg	aagactggaa	240
ctttgggtta	tgcctcccc	caaatggtac	attagaagat	acctataggt	atgtgcagtc	300
acaggccatt	acctgtcaaa	agcccactcc	tgaaaaggaa	aagccagatc	cctataagaa	360
ccttagtttt	tgggaggtta	atttaaaaga	aaagttttct	agtgaattg		409

<210> 431
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<212> DNA

<213> Human Papilloma Virus subtype 11 (6727-7135/409 bp)

<400> 431

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gacactatgt	gcactctgtgt	ctaaatctgc	tacatacact	aattcagatt	ataaggaata	120
catgcgccat	gtggaggagt	ttgatttaca	gtttatTTTT	caattgtgta	gcattacatt	180
atctgcagaa	gtcatggcct	atatacacac	aatgaatcct	tctgttttgg	aggactggaa	240
ctttggttta	tgcctccac	caaatggtac	actggaggat	acttatagat	atgtacagtc	300
acaggccatt	acctgtcaga	aacccacacc	tgaaaaagaa	aaacaggatc	cctataagga	360
tatgagtttt	tgggagggtta	acttaaaaga	aaagttttca	agtgaatta		409

<210> 432

<211> 412

<212> DNA

<213> Human Papilloma Virus subtype 16 (6602-7013/412 bp)

<400> 432

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gtcattatgt	gctgccatat	ctacttcaga	aactacatat	aaaaatacta	actttaagga	120
gtacctacga	catggggagg	aatatgattt	acagtttatt	tttcaactgt	gcaaaataac	180
cttaactgca	gacgttatga	catacataca	ttctatgaat	tccactattt	tggaggactg	240
gaattttggt	ctacaacctc	ccccaggagg	cacactagaa	gatacttata	ggtttgtaac	300
ccaggcaatt	gcttgtcaaa	aacatacacc	tccagcacct	aaagaagatg	atccccctaa	360
aaaatacact	ttttgggaag	taaatttaaa	ggaaaagttt	tctgcagacc	ta	412

<210> 433

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 18 (6587-6992/415 bp)

<400> 433

tgtttgctgg	cataatcaat	tatttggttac	tgtggtagat	accactccca	gtaccaattt	60
aacaatatgt	gcttctacac	agtctcctgt	acctgggcaa	tatgatgcta	ccaaatttaa	120
gcagtatagc	agacatgttg	aggaatatga	tttgagttt	atttttcagt	tgtgtactat	180
tactttaact	gcagatgtta	tgctctatat	tcatagtagt	aatagcagta	ttttagagga	240
ttggaacttt	ggtgttcccc	cccccccaac	tactagtttg	gtggatacat	atcgttttgt	300
acaatctggt	gctattacct	gtcaaaagga	tgctgcaccg	gctgaaaata	aggatcccta	360
tgataagtta	aagttttgga	atgtggattt	aaaggaaaag	ttttcttttag	actta	415

<210> 434

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 26 (6553-6967/415 bp)

<400> 434

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taccattagt	acattatctg	cagcatctgc	atccactcca	tttaaaccat	ctgattataa	120
acaatttata	agacatggcg	agaatatga	attacaattt	atatttcagt	tgtgtaaaat	180
aacacttaca	acagatgtta	tggcttacat	acatttaatg	aatgcctcca	tattggagga	240
ttggaatttt	ggactaacct	tacctccac	tgctagtttg	gaagatgcct	ataggtttat	300

taaaaactct	gctactacct	gtcagcgtaa	cgccccctcct	gtgccaaagg	aagatccttt	360
tcaaaaattt	aaattttggg	atgtagattt	aaaagaaaaa	ttttctattg	atttg	415

<210> 435

<211> 412

<212> DNA

<213> Human Papilloma Virus subtype 31 (6520-6931/412 bp)

<400> 435

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gtctgtttgt	gctgcaattg	caaacagtga	tactacattt	aaaagtagta	attttaaaga	120
gtatttaaga	catggtgagg	aatttgattt	acaatttata	tttcagttat	gcaaaataac	180
attatctgca	gacataatga	catatatcca	cagtatgaat	cctgctattt	tggaagattg	240
gaattttgga	ttgaccacac	ctccctcagg	ttctttggag	gataacctata	ggtttgtcac	300
ctcacaggcc	attacatgtc	aaaaaactgc	cccccaaaag	ccaaggaag	atccatttaa	360
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<210> 436

<211> 409

<212> DNA

<213> Human Papilloma Virus subtype 32 (6837-7245/409 bp)

<400> 436

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gactgtgtgt	gctactgtaa	caactgaaga	cacatacaag	tctactaact	ttaaggaata	120
tctacgccat	gcagaggaat	atgatataca	gttttatattt	caattgtgca	aaattacatt	180
atctgtagag	gttatgtcat	atatccacac	catgaatcct	gacatactag	acgattggaa	240
tgttggtgta	gctccaccgc	cctctggtac	tttagaagat	agttatagat	ttgtgcagtc	300
tcaggccata	cgatgtcaag	ctaaggtaac	agcacctgaa	aaaaaggatc	ctttttctga	360
ctattcattt	tggaagtaaa	atztatctga	aaagttttct	agtgattta		409

<210> 437

<211> 409

<212> DNA

<213> Human Papilloma Virus subtype 33 (6559-6967/409 bp)

<400> 437

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gacttttatgc	acacaagtaa	ctagtgcag	tacatatata	aatgaaaatt	ttaaagaata	120
tataagacat	gttgaagaat	atgatctaca	gtttgttttt	caactatgca	aagttacctt	180
aactgcagaa	gttatgacat	atattcatgc	tatgaatcca	gatatttttag	aagattggca	240
atttggttta	acacctcttc	catctgctag	tttacaggat	acctataggt	ttgttacctc	300
tcaggctatt	acgtgtcaaa	aaacagtacc	tccaaaggaa	aaggaagacc	ccttaggtaa	360
atatacattt	tggaagtgg	atttaaagga	aaaattttca	gcagattta		409

<210> 438

<211> 412

<212> DNA

<213> Human Papilloma Virus subtype 35 (6542-6953/412 bp)

<400> 438

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gtctgtgtgt	tctgctgtgt	cttctagtga	cagtacatat	aaaaatgaca	attttaagga	120
atattttaagg	catggtgaag	aatatgattt	acagtttatt	tttcagttat	gtaaaataac	180
actaacagca	gatgttatga	catatatatt	tagtatgaac	ccgtccattt	tagaggattg	240
gaattttggc	cttacaccac	cgccttctgg	taccttagag	gacacatatc	gctatgtaac	300
atcacaggct	gtaacttgtc	aaaaacccag	tgcacaaaaa	cctaaagatg	atccattaaa	360
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<210> 439

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 37 (6711-7125/415 bp)

<400> 439

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agaataccta	agacatgttg	aagaatacca	gctttcaatt	attttacaac	tttgtaaagt	180
tccttttaaag	gctgagggtt	taactcagat	aaatgcaatg	aattctggta	tattggaaga	240
gtggcaatta	ggatttgtac	ctactccaga	taattcagta	catgaccttt	ataggtacat	300
taattcaaag	gctaccaagt	gtcctgatgc	agttgttgaa	aaagaaaagg	aagatccctt	360
tgcaaaatat	acattttgga	atgtagattt	aactgaaaaa	ttatcattgg	attta	415

<210> 440

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 39 (6605-7017/415 bp)

<400> 440

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tacattatct	acctctatag	agtccttccat	accttctaca	tatgatcctt	ctaagtttaa	120
ggaatatacc	aggcacgtgg	aggagtatga	tttacaattt	atattttcaac	tgtgtactgt	180
cacattaaca	actgatgtta	tgtcttatat	tcacactatg	aattcctcta	tattggacaa	240
ttggaatttt	gctgtagctc	ctccaccatc	tgccagtttg	gtagacactt	acagatacct	300
acagtctgca	gccattacat	gtcaaaaagga	tgctccagca	cctgaaaaga	aagatccata	360
tgacggtcta	aagttttgga	atgttgactt	aagggaagaa	tttagtttgg	aactt	415

<210> 441

<211> 409

<212> DNA

<213> Human Papilloma Virus subtype 42 (6802-7210/409 bp)

<400> 441

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gacttttgtg	gccactgcaa	catctggtga	tacatataca	gctgctaatt	ttaaggaata	120
tttaagacat	gctgaagaat	atgatgtgca	atttatattt	caattgtgta	aaataacatt	180
aactgttgaa	gttatgtcat	atatacacia	tatgaatcct	aacatattag	aggagtggaa	240
tgttggtggt	gcaccaccac	cttcaggaac	tttagaagat	agttataggt	atgtacaatc	300
agaagctatt	cgctgtcagg	ctaaggtaac	aacgccagaa	aaaaaggatc	cttattcaga	360
cttttggttt	tgggaggtaa	atttatctga	aaagttttct	actgattta		409

<210> 442
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 <212> DNA
 <213> Human Papilloma Virus subtype 43 (21-435/415 bp)

<400> 442

catttgTTTT	gggaatcagt	tgtttgttac	agtggtagat	accactcgta	gtacaaactt	60
gacgttatgt	gcctctactg	accctactgt	gcccagtaca	tatgacaatg	caaagtttaa	120
ggaatacttg	cggcatgttg	aagaatatga	tctgcagttt	atatttcaat	tatgcataat	180
aacgctaaac	ccagagggtta	tgacatatat	tcatactatg	gatcccatat	tattagagga	240
ctggaatttt	ggtgtgtccc	cacctgcctc	tgcttctttg	gaagatactt	atcgcttttt	300
gtctaacaag	gccattgcat	gtcaaaaaaa	tgctcccca	aaggaacggg	aggatcccta	360
taaaaagtat	acattttggg	atataaatct	tacagaaaag	ttttctgcac	aactt	415

<210> 443
 <211> 415
 <212> DNA
 <213> Human Papilloma Virus subtype 44 (6647-7061/415 bp)

<400> 443

tatttgTTTg	ggaaatcagt	tatttgTTac	tgTTgtagat	actaccgta	gtacaaacat	60
gacaatatgt	gctgccacta	cacagTcccc	tccgtctaca	tatactagtg	aacaatataa	120
gcaatacatg	cgacatgttg	aggagTTTga	cttacaattt	atgtttcaat	tatgtagtat	180
taccttaacg	gCGgaggtaa	Tggcctatct	tcatactatg	aatgctggta	TTTTagaaca	240
gtggaacttt	gggtTgtcgc	cGccccaaa	Tggtacctta	gaggacaaat	acagatatgt	300
gcagTcccag	gccattacat	gtcaaaagcc	acccctgaa	aaggcaaagc	aggacccta	360
Tgcaaaatta	agTTTTTggg	aggtggatct	tagagaaaag	TTTTctagtg	agTTg	415

<210> 444
 <211> 415
 <212> DNA
 <213> Human Papilloma Virus subtype 45 (6582-6996/415 bp)

<400> 444

tatttgTTTg	cataatcagt	Tgtttgttac	Tgtagtggac	actaccgca	gtactaattt	60
aacattatgt	gcctctacac	aaaatcctgt	gccaagtaca	tatgacccta	ctaagtttaa	120
gcagtatagt	agacatgttg	aggaatatga	tttacagttt	atTTTtcagt	Tgtgcactat	180
tactTTaact	gcagaggTta	Tgtcatatat	ccatagtatg	aatagtagta	Tattagaaaa	240
Ttggaatttt	ggtgtccctc	caccacctac	tacaagTTtg	gtggatacat	atcgTTTTgt	300
gcaatcagtt	gctgttacct	gtcaaaagga	tactacacct	ccagaaaagc	aggatccata	360
Tgataaatta	aagTTTTTgga	ctgttgacct	aaaggaaaaa	TTTTcctccg	attTg	415

<210> 445
 <211> 412
 <212> DNA
 <213> Human Papilloma Virus subtype 51 (6486-6897/412 bp)

<400> 445

catttgctgg	aacaatcagc	tttttattac	ctgtgttgat	actaccagaa	gtacaaat	60
aactattagc	actgccactg	ctgcggttcc	cccaacattt	actccaagta	actttaagca	120
atatattagg	catggggaag	agtatgaatt	gcaattttatt	tttcaattat	gtaaaattac	180
tttaactaca	gaggtaatgg	cttattttaca	cacaatggat	cctaccattc	ttgaacagtg	240
gaattttgga	ttaacattac	ctccgtctgc	tagtttggag	gatgcatata	ggtttgttag	300
aaatgcagct	actagctgtc	aaaaggacac	ccctccacag	gctaagccag	atcctttggc	360
caaataaaa	ttttgggatg	ttgatttaaa	ggaacgattt	tctttagatt	ta	412

<210> 446

<211> 409

<212> DNA

<213> Human Papilloma Virus subtype 52 (6623-7031/409 bp)

<400> 446

catatgttgg	ggcaatcagt	tgtttgtcac	agttgtggat	accactcgta	gcactaacat	60
gactttatgt	gctgaggtta	aaaaggaaag	cacatataaa	aatgaaaatt	ttaaggaata	120
ccttcgtcat	ggcgaggaat	ttgattttaca	attttattttt	caattgtgca	aaattacatt	180
aacagctgat	gttatgacat	acattcataa	gatggatgcc	actatttttag	aggactggca	240
atttggcctt	acccccaccac	cgtctgcac	tttggaggac	acatacagat	ttgtcacttc	300
tactgctata	acttgtcaaa	aaaacacacc	acctaaagga	aaggaagatc	ctttaaagga	360
ctatatgttt	tgggaggtgg	atttaaaaga	aaagttttct	gcagattta		409

<210> 447

<211> 409

<212> DNA

<213> Human Papilloma Virus subtype 53 (6614-7022/409 bp)

<400> 447

catctgttgg	aacaatcagt	tatttgtaac	tgttgtggat	accaccagga	atacaaacat	60
gactctttcc	gcaaccacac	agtctatgtc	tacatataat	tcaaagcaaa	ttaaacagta	120
tgtagacat	gcagaggaat	atgaattaca	atttgtgttt	caactatgta	aaatatccct	180
gtctgctgag	gttatggcct	atttacatac	tatgaattct	accttactgg	aagactggaa	240
tataggtttg	tcgcctcctg	ttgccactag	ccttagaggac	aaatacagat	atgtgaaaag	300
tgcagctata	acctgtcaaa	aggatcagcc	ccctcctgaa	aagcaggacc	cactatctaa	360
atataaat	ttgggaggtca	atttgcaaaa	cagtttttct	gctgatttg		409

<210> 448

<211> 412

<212> DNA

<213> Human Papilloma Virus subtype 54 (6561-6972/412 bp)

<400> 448

tatttgttgg	ggcaatcagg	tgtttttaac	agttgttagat	accacccgta	gtactaacct	60
aacattgtgt	gctacagcat	ccacgcagga	tagctttaat	aattctgact	ttagggagta	120
tattagacat	gtggaggaat	atgattttaca	gtttatat	cagttatgta	ccataaccct	180
tacagcagat	gttatggcct	atattcatgg	aatgaatccc	actattctag	aggactggaa	240
ctttggtata	acccccccag	ctacaagtag	tttggaggac	acatataggt	ttgtacagtc	300
acaggccatt	gcatgtcaaa	agaataatgc	ccctgcaaag	gaaaaggagg	atccttacag	360
taaattta	ttttggactg	ttgaccttaa	ggaacgattt	tcatctgacc	tt	412

<210> 449
 <211> 415
 <212> DNA
 <213> Human Papilloma Virus subtype 55 (6647-7061/415 bp)

<400> 449

tatttggttg	gggaatcagt	tatttggttac	tggtgtagat	actacacgta	gtacaaacat	60
gacaatatgt	gctgctacaa	ctcagtcctc	atctacaaca	tataatagta	cagaatataa	120
acaatacatg	cgacatggtg	aggagtttga	cttacagttt	atgtttcaat	tatgtagtat	180
taccttaact	gctgaggtaa	tggcctat	acataccatg	aatcctggta	ttttggaaca	240
gtggaacttt	gggttgctgc	cacccccaaa	tggtacctta	gaagacaaat	acagatatgt	300
gcagtcacag	gccattacat	gtcaaaagcc	tccccctgaa	aaggcaaagc	aggaccctta	360
tgcaaaatta	agtttttggg	aggtagatct	cagagaaaag	ttttctagt	agtta	415

<210> 450
 <211> 409
 <212> DNA
 <213> Human Papilloma Virus subtype 56 (6559-6967/409 bp)

<400> 450

catttgctgg	ggtaatcaat	tatttggttac	tgtagtagat	actactagaa	gtactaacat	60
gactattagt	actgctacag	aacagtttaag	taaatatgat	gcacgaaaaa	ttaatcagta	120
ccttagacat	gtggaggaat	atgaattaca	atgtgttttt	caattatgca	aaattacttt	180
gtctgcagag	gttatggcat	atttacataa	tatgaatgct	aacctactgg	aggactggaa	240
tattgggtta	tccccgccag	tggccaccag	cctagaagat	aaatatagat	atgttagaag	300
cacagctata	acatgtcaac	gggaacagcc	accaacagaa	aaacaggacc	cattagctaa	360
atataaattt	tgggatgtta	acttacagga	cagtttttct	acagacctg		409

<210> 451
 <211> 409
 <212> DNA
 <213> Human Papilloma Virus subtype 58 (6608-7016/409 bp)

<400> 451

catttgctgg	ggcaatcagt	tatttggttac	cgtgggtgat	accactcgta	gcactaatat	60
gacattatgc	actgaagtaa	ctaaggaagg	tacatatataa	aatgataatt	ttaaggaata	120
tgtacgtcat	gttgaagaat	atgacttaca	gtttgttttt	cagctttgca	aaattacact	180
aactgcagag	ataatgacat	atatacatat	tatggattcc	aatatttttg	aggactggca	240
atttggttta	acacctctc	cgtctgccag	tttacaggac	acatatagat	ttgttacctc	300
ccaggctatt	acttgccaaa	aaacagcacc	ccctaaagaa	aaggaagatc	cattaaataa	360
atatactttt	tgggaggtta	acttaaagga	aaagttttct	gcagatcta		409

<210> 452
 <211> 415
 <212> DNA
 <213> Human Papilloma Virus subtype 59 (6571-6985/415 bp)

<400> 452

tatatgttgg	cacaatcaat	tgtttttaac	agttgtagat	actactcgca	gcaccaatct	60
ttctgtgtgt	gcttctacta	cttctcttat	tcctaagtga	tacacaccta	ccagttttta	120

agaatatgcc	agacatgtgg	aggaatttga	tttgcagttt	atatttcaac	tgtgtaaaat	180
aacattaact	acagaggtaa	tgtcatacat	tcataatatg	aataccacta	ttttggagga	240
ttggaatttt	ggtgttacac	cacctcctac	tgctagttta	gttgacacat	accgttttgt	300
tcaatctgct	gctgtaacct	gtcaaaagga	caccgcaccg	ccagttaaac	aggaccctta	360
tgacaaacta	aagttttggc	ctgtagatct	taaggaaagg	ttttctgcag	atctt	415

<210> 453

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 61 (6732-7146/415 bp)

<400> 453

tattttgttgg	tttaaatgaat	tgttttgtaac	cgttgtggat	accacccgca	gtactaat	60
aaccatttgt	actgctacat	ccccccctgt	atctgaatat	aaagccacaa	gcttttaggga	120
atatttgcgc	catacagagg	agtttgattt	gcaatttatt	tttcagttat	gtaaaataca	180
tttaaccctt	gaaattatgg	cctacctaca	taatataaat	aaggccttgt	tggatgactg	240
gaactttggg	gtggtaccac	caccctctac	cagtttagaa	gacacatata	ggtttttgca	300
gtccagagct	attacatgtc	agaagggtgc	tgctgccccg	ccgcccaagg	aggatcgcta	360
tgccaagtta	tccttttggg	ctgttgattt	acgagacaag	ttttccactg	atttg	415

<210> 454

<211> 409

<212> DNA

<213> Human Papilloma Virus subtype 62 (21-429/409 bp)

<400> 454

tattttgttgg	tttaaatgaac	tgttttgttac	tggtgtggat	actaccagaa	gtactaat	60
tactatttgt	accgcctcca	ctgctgcagc	agaatacacg	gctaccaact	ttagggaatt	120
tttgcgacac	acggaggaat	ttgatttgca	atattatatt	caattgtgca	aaatacagtt	180
aacccccgaa	attatggcct	acctgcataa	tatgaacaag	gaccttttgg	atgactggaa	240
ctttgggggt	ttacctcccc	cttccactag	tttagatgag	acatatcact	atttcgagtc	300
tcgggctatt	acatgtcaaa	gggggctgcc	taccgcctcc	aagggtggacc	cgtatgcgca	360
aatgacattt	tggactgtgg	atcttaagga	caagttgtct	actgatttg		409

<210> 455

<211> 409

<212> DNA

<213> Human Papilloma Virus subtype 66 (6609-7017/409 bp)

<400> 455

catatgctgg	ggtaatcagg	tattttgttac	tggtgtggat	actaccagaa	gcaccaacat	60
gactattaat	gcagctaaaa	gcacattaac	taaatatgat	gcccgtagaa	tcaatcaata	120
ccttcgccat	gtggaggaat	atgaactaca	gtttgtgttt	caactttgta	aaataacctt	180
aactgcagaa	gttatggcat	atgtgcataa	tatgaataat	actttattag	acgattggaa	240
tattggctta	tccccaccag	ttgcaactag	cttagaggat	aaatataggt	atattaaaag	300
cacagctatt	acatgtcaga	gggaacagcc	ccctgcagaa	aagcaggatc	ccctggctaa	360
atataagttt	tgggaagtta	atttacagga	cagcttttct	gcagacctg		409

<210> 456

<211> 409

<212> DNA

<213> Human Papilloma Virus subtype 67 (6584-6992/409 bp)

<400> 456

tatatgctgg	ggtaatcaaa	tatttggttac	tggtgtagac	actacacgta	gtaccaacat	60
gactttatgt	tctgaggaaa	aatcagaggg	tacatacaaa	aatgaaaact	ttaaggaata	120
ccttagacat	gtggaagaat	atgatttgca	gtttatatatt	cagctgtgca	aaatatccct	180
tactgcaaat	gttatgcaat	acatacacac	catgaatcca	gatataattag	aggactggca	240
atttggcctt	acaccacctc	cttcaggtaa	tttacaggac	acatatagat	ttgttacctc	300
gcaggctatt	acctgtcaaa	aaacatcccc	tccaacagca	aaggaagatc	ctcttaaaaa	360
gtacagtttt	tgggaaatca	atttaaagga	aaaattttct	gcagattta		409

<210> 457

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 68 (2582-2996/415 bp)

<400> 457

tatttggttg	cataatcaat	tatttcttac	tggtgtggat	accactcgca	gtaccaattt	60
tactttgtct	actactactg	aatcagctgt	accaaattatt	tatgataccta	ataaatttaa	120
ggaatatatt	aggcatggtg	aggaatatga	tttgcaattt	atatttcagt	tgtgtactat	180
aacattgtcc	actgatgtaa	tgtcctatat	acatactatg	aatcctgcta	ttttggatga	240
ttggaatttt	ggtgttgccc	ctccaccatc	tgctagtctt	gtagatacat	accgctatct	300
gcaatcagca	gcaattacat	gtcaaaaaga	cgccctgca	cctactaaaa	aggatccata	360
tgatggctta	aacttttggg	atgtaaattt	aaaggaaaag	tttagttctg	aactg	415

<210> 458

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 69 (6509-6923/415 bp)

<400> 458

catttggttg	ggcaaccaat	tggttggttac	ttgtgtagat	actaccgcga	gtaccaacct	60
cactattagt	actgtatctg	cacaatctgc	atctgccact	tttaaaccat	cagattataa	120
gcagtttata	aggcatggtg	aggaatatga	attacagttt	atatttcaat	tgtgtaaaat	180
tactcttacc	actgatgtaa	tggcctatat	ccatacaatg	aattctacta	ttttggaaaa	240
ttggaatttt	ggccttacct	tgccctctac	tgctagtgtg	gaagatgcat	ataggtttat	300
taaaaattca	gctactacat	gtcaacgcga	tgccctgca	cagcccaagg	aggatccatt	360
tagtaaatta	aaattttggg	acgttgatct	taaagaaaag	ttttctattg	attta	415

<210> 459

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 70 (6549-6963/415 bp)

<400> 459

catttggttg	cataaccagt	tggtttattac	tggtggtggac	actacacgta	gtactaattt	60
tacattgtct	gcctgcaccg	aaacggccat	acctgctgta	tatagcccta	caaagtttaa	120
ggaatatact	aggcatgttg	aggaatatga	tttacaattt	atatttcaat	tgtgtactat	180
cacattaact	gctgacgtta	tggcctacat	ccatactatg	aatcctgcaa	ttttggacaa	240

ttggaatata	ggagttaccc	ctccaccatc	tgcaagcttg	gtggacacgt	ataggtat	300
acaatcagca	gctatagcat	gtcaaaaagga	tgctcctaca	cctgaaaaaa	aggatcccta	360
tgacgattta	aaat	tttggga	atgttgattt	aaaggaaaag	tttagtacag	415

<210> 460

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 72 (6758-7172/415 bp)

<400> 460

catctgttgg	tttaatgagc	tttttgtgac	agttgtagat	actactcgca	gtactaatgt	60
aactat	tttgt	actgccacag	cgctcctctgt	atcagaatat	acagcttcta	120
gtatcttcgc	cacactgagg	aatttgattt	gcagtttata	tttcaactgt	gtaaaattca	180
cttaactcct	gaaattatgg	cctacttgca	caatatgaat	aaggccttat	tgatgactg	240
gaat	tttgg	gtggtgcctc	ctccttctac	cagtttggat	gatacctata	300
gtctcgtgcc	attacctgtc	aaaagggggc	tgccaccct	cctcctaaag	aagatccata	360
tgctaactta	tccttttggga	ctgtggattt	aaaggacaaa	ttttccactg	acttg	415

<210> 461

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 74 (1613-2027/415 bp)

<400> 461

tatttgttgg	ggtaatcaat	tatttgttac	agttgtggat	accacacgca	gtactaacat	60
gactgtgtgt	gctcctacct	cacaatcgcc	ttctgctaca	tataatagtt	cagactacaa	120
acaatacatg	cgacatgtgg	aggaatttga	tttgcaattt	at	tttttcaat	180
taagttaact	gctgagggtta	tgccctatat	tcatactatg	aatcctacag	ttttagaaga	240
gtggaacttt	gggctaacgc	ctccccccaa	tggtacttta	gaagacacct	acagatatgt	300
gcagtc	ccag	gctattacat	gtcaaaaacc	tacgcctgat	aaagcaaagc	360
tgcaaattta	agtttttggg	aagttaattc	taaggaaaag	ttttctagt	aatta	415

<210> 462

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype 82 (6536-6950/415 bp)

<400> 462

catttgctgg	aataatcagc	tttttattac	ttgtgttgac	actactaaaa	gtaccaattt	60
aaccattagc	actgctgtta	ctccatctgt	tgcaaaaaca	tttactccag	caaactttta	120
gcagtacatt	aggcatgggg	agaatatga	attgcaattt	atatttcaat	tgtgtaaaat	180
cactttaact	actgaaatta	tggttacct	gcacaccatg	gattctacaa	ttttagaaca	240
gtggaatttt	ggattaacat	tgccccctc	cgctagtttg	gaggatgcct	atcgatttgt	300
aaaaaatgca	gcaacatcct	gtcacaagga	cagtcctcca	caggctaaag	aagacccttt	360
ggcaaaatat	aaat	tttggga	atgtagacct	taaggaaacgc	ttttctttgg	415

<210> 463

<211> 412

<212> DNA

<213> Human Papilloma Virus subtype CP8061 (21-432/412 bp)

<400> 463

catttggttg	ggcaatcagc	tttttgtaac	agttgtggac	acatcacgta	gtacaaatat	60
gtccatctgt	gctacaaaa	ctgttgagtc	tacatatata	gcctctagtt	tcattggaata	120
tttgagacat	ggagaagaat	ttgatttgca	atattatatt	caactatgtg	ttattaattt	180
aacagctgaa	attatggcct	acttacatcg	catggatgct	acattactgg	aggactggaa	240
tttttggttc	ttaccacctc	ctactgctag	tcttggtgat	acctaccgct	ttttacagtc	300
tcaggccata	acctgtcaga	aaaacagtc	tcctcctgca	gaaaaaaagg	acccttatgc	360
agatcttaca	ttttggggagg	tggatttaaa	ggagcgggtt	tcactagaat	tg	412

<210> 464

<211> 412

<212> DNA

<213> Human Papilloma Virus subtype CP8304 (21-432/412 bp)

<400> 464

tatttggttg	tttaatgaaa	tggttggttac	agtgggtggat	actaccagaa	gcaccaattt	60
tactatttgc	acagctacat	ctgctgctgc	agaatacaag	gcctctaact	ttaaggaatt	120
tctgcgccat	acagagggaat	atgatttgca	gtttattttc	caattatgta	aaatacagtt	180
aacaccagaa	attatggcct	acttacataa	tatgaacaag	gcactggttg	atgattggaa	240
ttttggtgtg	ttgccacctc	cttccaccag	tttagatgac	acatatcgct	ttttacagtc	300
tcggggcatt	acctgtcaaa	agggtgctgc	tgcccctgcg	cccaaagagg	acccttatgc	360
cgacatgtca	ttttggacag	ttgaccttaa	ggacaagttg	tctactgatt	tg	412

<210> 465

<211> 350

<212> DNA

<213> Human Papilloma Virus subtype L1AE5 (11-360/350 bp)

<400> 465

ggcacaacca	attatattata	actgtggttag	acacaacacg	tagtaccaat	cttaccttat	60
ctactgcaac	tactaatcca	gttccatcta	tatatgaacc	ttctaaattt	aaggaatata	120
cacgccatgt	agaggaatat	gattttacaat	ttatattttca	attgtgtaaa	attacactta	180
ctactgatgt	tatgtcttat	atacataaca	tggatcctac	tatttttagat	agttggaatt	240
ttggtggttag	tcctccccc	tctgctagct	tagtagatac	atatagggtt	ttacagtc	300
ctgccattac	atgtcagaag	gatgtggttg	ttccacaaaa	aaaggatcca		350

<210> 466

<211> 415

<212> DNA

<213> Human Papilloma Virus subtype MM4 (21-435/415 bp)

<400> 466

catttgctgg	aataatcagc	tttttattac	ttgtgttgac	actactagaa	gtaccaattt	60
aaccattagc	actgctgtta	ctcaatctgt	tgcacaaaca	tttactccag	caaactttta	120
gcaatacatt	aggcatgggg	agaatatga	attgcaattt	atatttcaat	tgtgtaaaat	180
cactttaact	actgaaatta	tggcttacct	gcacaccatg	gattctacaa	ttttagaaca	240
gtggaatttt	ggattaacct	tgccccctc	agctagtttg	gaggatgcct	atcgatttgt	300
aaaaaatgca	gcaacatcct	gtcacaagga	cagtcctcca	caggctaaac	aagacccttt	360
ggcaaaatat	aaattttgga	atgtagacct	taaggaacgc	ttttcttttg	atttg	415

<210> 467
 <211> 412
 <212> DNA
 <213> Human Papilloma Virus subtype MM7 (21-432/412 bp)

<400> 467

catttggttg	tttaatgagt	tatttggttac	agttgtagat	actaccgcga	gtaccaatat	60
tactatttca	gctgctgcta	cacaggctaa	tgaatacaca	gcctctaact	ttaaggaata	120
cctccgccac	accgaggaat	atgacttaca	ggttatattg	caactttgca	aaatacatct	180
tacccttgaa	attatggcat	acctacatag	tatgaatgaa	catttattgg	atgagtggaa	240
ttttggcgtg	ttaccacctc	cttccaccag	ccttgatgat	acctatcgct	atctgcagtc	300
ccgtgctatt	acctgcaaaa	agggtccttc	cgcccctgcc	cctaaaaagg	atccttatga	360
tggccttgta	ttttgggagg	ttgatttaaa	ggacaaacta	tccacagatt	tg	412

<210> 468
 <211> 412
 <212> DNA
 <213> Human Papilloma Virus subtype MM8 (21-432/412 bp)

<400> 468

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